ASSIGNMENT 7

Textbook Assignment: "Brakes" (continued) and "Automotive Chassis and Body," chapters 7 and 8, pages 7-40 through 8-29.

7-1. What valve has the same type of mounting as the quick-release valve?

1. Safety
2. Tractor protecting
3. Relay emergency
4. Combined limiting and quick release

7-2. What valve functions as a set of remotely controlled cutout valves for normal and emergency air brake operations?

1. Relay
2. Tractor protection
3. Relay emergency
4. Safety

7-3. Of the following functions, which one is NOT a function of the relay emergency valve in an air brake system?

1. To speed up the application of the trailer brakes
2. To speed up the release of the trailer brakes
3. To apply the trailer brakes when the emergency line of the trailer is broken
4. To protect the tractor air brake system under trailer breakaway conditions

7-4. What is the function of the relay emergency valve during normal operation of a tractor-trailer unit?

1. To protect the tractor air brake system under conditions of when severe leakage develops in the tractor or trailer
2. To increase the air pressure in a designated area to speed up the application and release of the trailer brakes
3. To synchronize trailer service brake air pressure and tractor service air brake pressure during treadle valve operation
4. To control the air pressure that is delivered to the brake chambers of the trailer

7-5. If the brakes engage when the emergency line is removed from a charged trailer system, the relay emergency valve is functioning properly.

1. True
2. False

7-6. What is the function of the dummy couplings?

1. To allow air to leave a unit while preventing dirt from entering
2. To prevent dirt and moisture from entering unused air lines
3. To increase air pressure to speed up application and release of the trailer brakes
4. To conserve air pressure

7-7. Anytime the air pressure is within the normal operating range, the low-pressure warning indicator will

1. remain open
2. remain closed
3. open and close intermittently
4. begin to flash and buzz

7-8. The contacts on an air brake system stoplight switch will close when subjected to a minimum air pressure of

1. 5 psi
2. 10 psi
3. 15 psi
4. 20 psi

7-9. To test for leakage of various components within the air brake system, you should use

1. water
2. a very light-weight oil
3. a thick mixture of soapsuds
4. any water-free liquid

7-10. The air-hydraulic-power cylinder (Air-Pak) is composed of which of the following components?

1. Master cylinder, compressed air cylinder, and slave cylinder
2. Slave cylinder, control valve, and master cylinder
3. Control valve, compressed air cylinder, and slave cylinder
4. Compressed air cylinder, control valve, and master cylinder

7-11. What component of the Air-Pak houses the residual check valve?

1. Control valve
2. Master cylinder
3. Slave cylinder
4. Compressed air cylinder

7-12. Forward movement of the piston in the compressed air cylinder is dependent upon

1. brake pedal pressure
2. hydraulic pressure
3. spring pressure
4. air pressure

7-13. In an air-over-hydraulic brake system, fluid pressure in the brake lines is always in direct ratio to the

1. amount of air pressure entering the compressed air cylinder
2. resultant hydraulic pressure admitted to the air cylinder
3. pressure forcing the power piston forward
4. foot pressure on the brake pedal

7-14. In an air-over-hydraulic brake system, the degree of brake application is determined by the amount of compressed air trapped in the power cylinder when brake pedal movement is stopped.

1. True
2. False

7-15. When the brake pedal is released, what force returns the power piston to the released position?

1. Air
2. Spring
3. Hydraulic
4. Air-over-hydraulic

7-16. Which of the following requirements is NOT satisfied by the components of the vehicle chassis?

1. Support the vehicle and its payload
2. Provide for directional control
3. Allow smooth operation over rough terrain
4. Enclose the mechanical components and passenger compartment

7-17. What is the function of the cross members in a frame assembly?

1. To reduce vibration
2. To add extra strength at the joints
3. To prevent weaving and twisting of the frame
4. To support the payload of the vehicle

7-18. In a typical passenger vehicle, the frame supplies 37 percent of the torsional rigidity and 34 percent of the bending rigidity with the balance supplied by the body.

1. True
2. False

7-19. The side members of many passenger vehicle frames are closer together in the front than in the rear in order to

1. supply more rigid support for the engine
2. allow the vehicle to make sharper turns
3. supply a more rigid support for the front wheels
4. reduce vibration from the engine

7-20. What type of frame construction allows an increase in the amount of noise transmitted into the passenger compartment?

1. Ladder
2. Integrated
3. Separated
4. Jack

7-21. The suspension system of a vehicle is NOT designed to

1. support the weight of the vehicle
2. allow the vehicle to be driven with varying loads
3. allow the vehicle to travel over various type of terrain
4. allow body squat when accelerating with a heavy load

7-22. What component of the suspension system prevents the control arm from swinging to the front or rear of the vehicle?

1. Control arm bushings
2. Strut rod
3. Stabilizer bar
4. Strut

7-23. The control arm of a vehicle has bushings on the inner end. What suspension component is attached to the outer end?

1. Shock absorber
2. Strut
3. Ball joint
4. Stabilizer bar

7-24. What movement allows the steering knuckle and wheel to be turned left or right and move up and down with changes in road surface?

1. Compression and rebound of the shock absorber
2. Swiveling action of the ball joints
3. Lateral movement of the control arms
4. Horizontal movement of the strut rods

7-25. In a vehicle equipped with MacPherson struts, the strut assembly replaces the

1. upper control arm
2. lower control arm
3. upper damper unit
4. steering knuckle

7-26. In a vehicle equipped with MacPherson struts, what components are required to support the front-wheel assembly?

1. Strut assembly and lower control arm
2. Steering knuckle and upper damper unit
3. Strut assembly and upper damper unit
4. Steering knuckle and lower control arm

7-27. What term refers to the stiffness or tension of a spring?

1. Elastic tolerance
2. Spring ratio
3. Elastic deformation
4. Spring rate

7-28. Which of the following components do NOT add to the unsprung weight of a vehicle?

1. Wheels
2. Axles
3. Rims
4. Body

7-29. As a vehicle goes over a bump, its multileaf springs are held together by the

1. spring shackles
2. rebound clips
3. bumper blocks
4. clip plates

7-30. What is the purpose of an auxiliary spring?

1. To offset the effect of a weak main spring
2. To prevent braking of the main spring
3. To eliminate the danger of overloading
4. To provide additional support for heavy loads

7-31. What component in a bogie suspension system distributes the rear load evenly to the axles?

1. Cross shaft
2. Trunnion axle
3. Springs
4. Torque rods

7-32. What suspension component when worn will make a clunking or popping sound when the vehicle is turning or driving over a bump?

1. Ball joint
2. Strut rod
3. Control arm
4. Torsion bar

7-33. What tool is used to measure the axial play of a ball joint?

1. Spring gauge
2. Micrometer
3. Dial indicator
4. Outside caliper

7-34. A loose shock absorber will produce what type of sound?

1. Loud popping
2. Loud banging
3. Loud snapping
4. Loud clunking

7-35. In general, a good shock absorber should stop movement in two to three rebounds.

1. True
2. False

7-36. What action should be taken when you notice a damaged shock absorber on the rear of the vehicle?

1. Replace the damaged shock absorber
2. Replace all shock absorbers on the vehicle
3. Replace both rear shock absorbers
4. Install a helper spring to aid the damaged shock absorber

7-37. What condition lowers the height of the vehicle, allowing the body to settle towards the axles?

1. Faulty struts
2. Spring fatigue
3. Weak shock absorbers
4. Worn control arm bushings

7-38. What measurement is used to check the condition of the springs?

1. Vehicle height
2. Spring height
3. Curb height
4. Body height

7-39. What two factors are used to determine steering ratio?

1. Steering linkage ratio and steering mechanism gear ratio
2. Turning ratio and steering linkage ratio
3. Steering mechanism gear ratio and diameter of the pinion gear
4. Diameter of the worm gear and diameter of the pinion gear

7-40. Of the following systems, which one is NOT a type of manual steering?

1. Cam and lever
2. Rack and pinion
3. Sector and lever
4. Worm and nut

7-41. In a worm and sector steering gear, the pitman arm carries the sector gear and the worm gear is carried on the steering gear shaft.

1. True
2. False

7-42. The design of the worm and roller steering gear provides a

1. high steering ratio
2. low steering ratio
3. medium steering ratio
4. variable steering ratio

7-43. What action within a cam and lever steering gear causes the lever and pitman arm to rotate?

1. The rotation of the camshaft
2. The angle of the lever in relation to the cam
3. The movement of the studs on the cam
4. The cam screwing up and down on the camshaft

7-44. What is the most common type of worm and nut steering gear?

1. Rolling ball
2. Rotating ball
3. Recirculating ball
4. Reducing ball

7-45. In a manual rack-and-pinion steering gear, what component preloads the rack-and-pinion gear teeth to prevent excessive backlash?

1. Thrust plate
2. Thrust spring
3. Thrust washer
4. Thrust bearing

7-46. In a rack-and-pinion steering gear, the rack is connected to the steering arm by what steering linkage component?

1. Strut rod
2. Tie rods
3. Center link
4. Idler arms

7-47. The oil flow with a power steering system is directed by the

1. hydraulic pump
2. power cylinder
3. control valve
4. hydraulic gear housing

7-48. What are the three types of power steering systems?

1. Internal rotor, external spool, and rack and pinion
2. Internal spool, external slipper, and rack and pinion
3. Integral cylinder, external piston, and rack and pinion
4. Integral piston, external cylinder, and rack and pinion

7-49. What is the most common type of power steering system?

1. Integral piston
2. Integral cylinder
3. Internal spool
4. Internal rotor

7-50. With the steering wheel in the straight-ahead position, what valve in the integral power steering system balances hydraulic pressure on both sides of the power piston?

1. Relief
2. Flow
3. Shuttle
4. Control

7-51. The spool type control valve used in a power rack-and-pinion steering system is operated by the

1. torsion bar connected to the pinion gear
2. thrust action of the pinion shaft
3. hydraulic piston attached to the center of the rack
4. power cylinder connected to the rack

7-52. In a power rack-and-pinion steering system, what action moves the rotary type control valve to align specific oil passages?

1. Twisting of the torsion bar
2. Thrusting of the pinion shaft
3. Movement of the power cylinder
4. Oil pressure acting on the power piston

7-53. When you check an idler arm for wear, as a general rule the idler arm should NOT move up and down more than

1. 1/8 inch
2. 1/2 inch
3. 1/3 inch
4. 1/4 inch

7-54. When replacing tie-rod ends, you should take what action once the tie rod has been removed from the steering knuckle?

1. Measure steering knuckle length
2. Measure tie-rod length
3. Measure curb height
4. Measure front-end alignment

7-55. What are the two basic adjustments that may be made on a manual steering gearbox?

1. Over-center clearance and worm bearing preload
2. Sector bearing preload and pinion clearance
3. Pinion shaft preload and worm shaft clearance
4. Cam clearance and lever bearing preload

7-56. When adjusting a manual steering gearbox, you should first adjust the over-center clearance and then the worm bearing preload.

1. True
2. False

7-57. When adjusting the worm bearing preload, you should use what tool to measure the amount of force required to turn the steering wheel to the center position?

1. Centering gauge
2. Pressure scale
3. Spring scale
4. Wheel measuring gauge

7-58. You should take what action if the steering wheel binds after you have performed a worm bearing preload adjustment on a manual steering gearbox?

1. Readjust the worm bearing preload
2. Continue with the over-center clearance adjustment
3. Replace the gearbox
4. Loosen the worm bearing locknut

7-59. To find the center position of a steering wheel, turn the steering wheel from full right to full left wile counting the turns and divide by two.

1. True
2. False

7-60. The rack guide adjustment screw in a rack-and-pinion steering system is adjusted when there is

1. no play in the steering
2. excessive play in the control valve
3. no play in the power cylinder
4. excessive play in the steering

7-61. Which of the following power steering system services will you NOT routinely perform?

1. Check fluid level
2. Check belts
3. Check for leaks
4. Pressure test hoses

7-62. When you perform a pressure test on a power steering system, the shut-off valve should NOT be closed for more than

1. 5 seconds
2. 10 seconds
3. 15 seconds
4. 20 seconds

7-63. Of the following problems, which one is NOT common to the steering system?

1. Hard steering
2. Steering wheel play
3. Steering wheel vibration
4. Abnormal sounds when turning

7-64. You should NOT be able to turn the steering wheel more than 1 1/2 inches without causing the front wheels to move.

1. True
2. False

7-65. Which of the following steering problems may be caused by improper frame alignment?

1. Excessive steering wheel play
2. Abnormal noises when turning
3. Hard steering
4. Steering wheel vibration